

ATT9_IG1_DReduc_1of4

Economic Analysis – Flood Damage Reduction Costs and Benefits

The only project within this proposal that will provide direct flood reduction benefits is Project 4, described below.

Project 4: Integrated Ecosystem Restoration in Elkhorn Slough

Implementing Agency: Elkhorn Slough Foundation

The project "Integrated Restoration in Elkhorn Slough" involves receiving sediment from the Pajaro River Bench Excavation Project, a flood control project managed by the Santa Cruz County Department of Public Works, and using that material to restore salt marsh in Elkhorn Slough. The feasibility of the Bench Excavation Project depends on the availability of large-scale sediment disposal sites. The project is necessary as the capacity of the other available sites is insufficient to accommodate the sediment that will be generated. Therefore, flood damage benefits of the Bench Excavation Project are claimed as the benefits of this project.

The U.S. Army Corps of Engineers has estimated that the flood hazard on the lower Pajaro River results in Total Expected Annual Damages of \$12.1 million under existing conditions. (The relevant excerpt, from the Draft U.S. Army Corps of Engineers General Re-evaluation Report: Economics Appendix, is attached as an addendum to Wolcott, 2010.) This includes the damages in agriculture, transportation (automobile), residential, public space, commercial, industrial, and emergency categories. The \$12.1 million figure is used conservatively, as this value likely underestimates actual damages. Work is underway to revise the estimate in the agricultural and other damage categories (such as rail transportation). The expected result is that the next draft (planned for release in spring 2011) will publish a higher total annual damages figure than the current amount.

The Bench Excavation Project is anticipated to increase the levee conveyance or flood carrying capacity by approximately 2,000 cubic feet per second. This represents a 9-percent increase over the current levee capacity. Northwest Hydraulic Consultants analyzed existing and project conditions for a design storm based on discharges recorded in 1998, when levees were within 0.1 feet of overtopping (see attached, *Pajaro River Bench Excavation Project – Estimated Benefit*, Wolcott 2010). The model analysis indicated that the Bench Excavation Project would reduce the river stage by 0.5 to 1.9 feet in various reaches of the river. The effect of the project on the flood recurrence interval was not determined, however, and therefore the Total Expected Annual Damages under the project could not be estimated using probabilistic methods.

For the purposes of this proposal, the project is estimated to reduce Total Expected Annual Damages by 4.5-percent, half of the increase in channel conveyance, to \$11.5 million. Over a 50-year planning horizon and with a 6-percent discount rate, this benefit provides a present value of \$8.5 million, as quantified in Table 19.

Tables 18 and 19 are attached for this project as ATT9_IG1_DReduc_2of4 (Table 18) and ATT9_IG1_DReduc_3of4 (Table 19). Supporting material is also attached as ATT9_IG1_DReduc_4of4: Pajaro River Bench Excavation Project - Estimated Benefit. County of Santa Cruz Department of Public Works, December 16, 2010.